

What is claimed is:

1. An isolated nucleic acid molecule selected from the group consisting of:
 - (a) the DNA sequence of SEQ ID NO:5, SEQ ID NO:7, or SEQ ID NO:12;
 - (b) an isolated nucleic acid molecule encoding an amino acid sequence comprising the sequence of SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:13;
 - (c) an isolated nucleic acid molecule that hybridizes to either strand of a denatured, double-stranded DNA comprising the nucleic acid sequence of (a) or (b) under conditions of moderate stringency in 50% formamide and 6XSSC, at 42°C with washing conditions of 60°C, 0.5XSSC, 0.1% SDS;
 - (d) an isolated nucleic acid molecule derived by *in vitro* mutagenesis from SEQ ID NO:5, SEQ ID NO:7, or SEQ ID NO:12;
 - (e) an isolated nucleic acid molecule degenerate from SEQ ID NO:5, SEQ ID NO:7, or SEQ ID NO:12 as a result of the genetic code; and
 - (f) an isolated nucleic acid molecule selected from the group consisting of human IL-1 epsilon DNA, an allelic variant of human IL-1 epsilon DNA, and a species homolog of IL-1 epsilon DNA.
2. A recombinant vector that directs the expression of the nucleic acid molecule of claim 1.
3. An isolated polypeptide encoded by the nucleic acid molecule of claim 1.
4. A composition comprising a polypeptide of claim 3, and a physiologically acceptable diluent, excipient, or carrier.
5. An isolated polypeptide according to claim 3 in non-glycosylated form.
6. An antibody that binds to a polypeptide of claim 3.

7. An antibody according to claim 6, wherein the antibody is a monoclonal antibody.

8. An isolated polypeptide comprising the amino acid sequence of SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:13.

9. An isolated IL-1 epsilon polypeptide comprising an amino acid sequence that is at least 80% identical to the amino acid sequence presented in SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:13.

10. An IL-1 epsilon polypeptide of claim 9, wherein said polypeptide comprises an amino acid sequence that is at least 90% identical to the amino acid sequence presented in SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:13.

11. An IL-1 epsilon polypeptide of claim 9, wherein said polypeptide comprises an amino acid sequence that is at least 95% identical to the amino acid sequence presented in SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:13.

12. A host cell transfected or transduced with the vector of claim 2.

13. A method for the production of IL-1 epsilon polypeptide comprising culturing a host cell of claim 2 under conditions promoting expression, and recovering the polypeptide from the culture medium.

14. The method of claim 13, wherein the host cell is selected from the group consisting of bacterial cells, yeast cells, plant cells, and animal cells.

15. A method for the determination of the molecular weight of a sample protein comprising comparing molecular weight of a sample protein with the molecular weight of a polypeptide of claim 8;

wherein the comparison of molecular weights comprises application of the sample protein and polypeptide to an acrylamide gel, resolution of the sample protein and polypeptide using an electrical current, and application to the gel of a detection reagent, which stains the sample protein and polypeptide.

16. A kit for the determination of the molecular weights of peptide fragments of a sample protein comprising the following:

a vessel;

a polypeptide of claim 8;

at least one enzyme selected from the group consisting of Asparaginylendopeptidase, Arginylendopeptidase, *Achromobacter* protease I, Trypsin, *Staphylococcus aureus* V8 protease, Endoproteinase Asp-N, and Endoproteinase Lys-C;

a mutated polypeptide from said polypeptide by *in vitro* mutagenesis, wherein a site of enzymatic cleavage by the selected enzyme has been removed; and fragmented peptides derived from said polypeptide by enzymatic cleavage with the selected enzyme;

wherein said polypeptide and said sample protein are contacted with the selected protease; and wherein the protein, polypeptides, and fragmented peptides are visualized by application of the protein, polypeptides, and fragmented peptides to an acrylamide gel, resolution of the protein, polypeptides, and fragmented peptides using an electrical current, and application to the gel of a detection reagent, which stains the protein, polypeptides, and fragmented peptides.

17. A method of treating an inflammatory or autoimmune disease in a patient, comprising administering an antagonist of IL-1 epsilon to the patient.

18. The method of claim 18, wherein the antagonist of IL-1 epsilon is an antibody of claim 6.

19. A method of stimulating the immune system of an immunosuppressed patient, comprising administering a polypeptide of claim 3 to the immunosuppressed patient.

20. A method of stimulating the immune system of an immunosuppressed patient, comprising administering the composition of claim 4 to the immunosuppressed patient.

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